

higher importance to smelters than the alloys proper, and have been shown to obey the same laws when they are fused and allowed to cool.

The remainder of the book is devoted to the practical microscopy of metals and to an excellent and sufficiently full description of the iron-carbon alloys. The section is entitled "The Special Metallography of Iron and its Alloys," but no mention is made of any alloy of iron except those with carbon, so that for information as to all the special steels, which are now of so much interest, the reader must wait for another edition or another book.

Enough has been said to show that the standard work on metallography is yet to be written, but that students will find Dr. Goerens's book admirable as affording them a glimpse of the methods of investigating metals and alloys. T. K. R.

ELECTRO-THERAPEUTICS.

Röntgen Rays and Electro-therapeutics, with Chapters on Radium and Phototherapy. By Dr. M. K. Kassabian. Lippincott's New Medical Series. Pp. 545. (Philadelphia and London: J. B. Lippincott Co., n.d.) Price 15s. net.

WITHIN the last ten years the study of electro-therapeutics has rapidly grown, and, indeed, the progress has been so great that it is almost impossible for any author to record the constant advances published from day to day. Many valuable and important works have been published upon this subject, and when stating this, Dr. Kassabian says he wishes to present to his readers, clearly and concisely, the more important facts pertaining to electro-therapeutics and Röntgen rays.

The book begins with a general introduction, and considers the use of electricity in the medical curriculum. The following chapters are devoted to the nature and properties of magnetism and electricity, to different methods of producing electrical energy, and it should be said the apparatus required for the different forms have been very fully entered into. The next part of the work is devoted to pathological conditions in general diseases and special departments.

High frequency and, above all, as the title indicates, Röntgen rays occupy a very large part of the book, and the technique has been very carefully gone into. Though treating of this subject generally, the application of X-rays for diagnosis and treatment is fully described, and three chapters are devoted to the study of radium and phototherapy.

It will be seen from the very large number of subjects introduced that it must be a very difficult thing for any author to do justice to all in one volume. It can be said, however, that any student of electro-therapeutics carefully reading this book will find in it a valuable aid, and any practitioner desirous of obtaining an excellent general view of the subject will do well to obtain a copy. There can be no doubt whatever that the scope of the work has been carefully thought out, the descriptions and instructions are clear and concise, and Dr. Kassabian deserves to be congratulated heartily upon the general result. In

addition to the printed matter, there are no fewer than 245 illustrations, many of them of great value, and all of considerable service to the student.

We have hinted in the above statement that the subject is so vast that it is difficult to do justice to every department, and the author seems to be conscious of this, because he admits that the space is all too brief for the study of phototherapy. The same might be said of the attention paid to the physiological effects of high-frequency currents. All the same, Dr. Kassabian has exercised a wise discretion, because in some parts of the book, such as the dosage of X-rays—a vexed question, and yet one of vital importance to the profession—he has given an excellent *résumé* of what has been done.

Now and again the author might confuse a beginner for want of a slight explanation; for example, at one time he points out (p. 448) that the X-rays may produce pigmentation of the skin, and, again, he quotes the case of a brunette losing pigmentation by the same agent.

The index, although excellent, might be improved. For example, "hypertrichosis" and "naevus" will not be found under the initial letter of each word, but under "X-rays" in these affections. Other examples might be quoted.

OUR BOOK SHELF.

On the Plantation, Cultivation and Curing of Para India-rubber (Hevea brasiliensis), with an Account of its Introduction from the West to the Eastern Tropics. By H. A. Wickham. Pp. iv+78. (London: Kegan Paul, Trench, Trübner and Co., Ltd., 1908.) Price 3s. 6d. net.

MR. H. A. WICKHAM re-tells the interesting story of the successful effort of the Government of India with the aid of the Royal Gardens, Kew, to introduce the Para rubber tree (*Hevea brasiliensis*) from Brazil to the eastern tropics. Though the tale, at least in outline, is fairly familiar, it is one that bears repeating, and as told by Mr. Wickham will, in spite of a certain ruggedness of style, be read with interest, since it has the advantage of being from the pen of one who can say with truth of the history he relates, *pars magna fui*.

The passages in which Mr. Wickham strives to impress on his readers his experience that the Para rubber tree is properly a denizen of the immense forest-clad plains which occupy the areas between the great rivers of the Amazon system will attract attention. These plains are considerably more elevated than the flat ground which skirts the banks of the actual rivers, and is periodically inundated when the rivers rise. The tree does, indeed, occur on these low-lying tracts, but in Mr. Wickham's experience it does not thrive so well on these flooded levels as on the somewhat higher plateaux that abut upon them. The question is of interest because of the practical bearing it may have on the treatment of *Hevea brasiliensis* as a cultivated tree.

The discussion of the methods that, in the opinion of Mr. Wickham, are most suitable for the cultivation of the tree and the treatment of its latex will also be read with interest by those engaged in both occupations. The literature of the subject is already extensive, and much of it is of high quality. But what Mr. Wickham has to say will receive the attention of those practically interested in *Hevea* as coming from

one who has had a long working experience of the problems involved, and one who possesses, what is quite unusual, an intimate acquaintance with the Parà rubber tree, both as a forest species and under cultivated conditions.

Decoration of Metal, Wood, Glass, &c. Edited by H. C. Standage. Pp. 228. (New York: J. Wiley and Sons; London: Chapman and Hall, Ltd., 1908.) Price 8s. 6d. net.

THIS is described as a book for manufacturers, mechanics, painters, decorators, and all workmen in the fancy trades. It consists of a collection of recipes, such as are found in the well-known works of Spon and Cooley, but selected for use in the decorative treatment of various materials.

In the early sections the bronzing of iron, tin, zinc, alabaster, plaster of Paris, paper, and leathers is dealt with. Afterwards follow directions for such miscellaneous processes as the platinising of metals; plating with aluminium; the colouring of metals by immersion in chemicals; silvering and gilding; tinning and galvanising; the use of enamels and glazes; etching; varnishing, lacquering, and japanning. So far as can be judged from a recipe here and there, the methods seem to be trustworthy.

The book has no pretensions to being scientific, and it is necessarily, perhaps, more or less of a medley. Even so, the editing leaves something to be desired. The matter could have been better arranged and co-ordinated. Careless wording occasionally makes the meaning obscure or misleading. Thus the ingredients of a platinising solution (p. 25) include both $\frac{3}{4}$ oz. of "ammonia chloride" and 3 oz. of "sal-ammoniac"; whilst no quantity is specified for the chief ingredient, platinum chloride. A chemist would readily see where the blunder lies; a "workman in the fancy trades" would probably be using "langwidge" long before he had found the proper correction. C. S.

Cast-Iron House Drainage, with Especial Reference to Town Houses. By G. J. G. Jensen. Pp. xii+206. (London: The Sanitary Publishing Co., Ltd., 1908.) Price 4s. 6d. net.

THE view is gaining ground in this country that it is often desirable to provide cast-iron drainage in lieu of the usual provision of stoneware pipes. The vibration from heavy motor traffic, underground railways, &c., is a circumstance which specially calls for this provision; and it is also possible to lay iron pipes and to join them in circumstances which involve delay and difficulty in the case of cement joints—such as during times of frost and in water-logged ground. The expense involved in repairs of stoneware drains must often exceed the initial increased cost (10 to 30 per cent.) involved in iron drainage, for the cast-iron drain, as the writer points out, is far more durable than the stoneware. This greater durability is mainly due to the longer lengths in which the iron pipes are manufactured, involving a very great reduction in the number of joints; a stoneware drain, for instance, thirty yards in length, will necessitate 45 joints, whereas in a similar length of iron drain there need only be ten. Moreover, the joints being made of molten lead are stronger and more trustworthy than the cement joints of the stoneware drain, and the iron drain is straighter and smoother in the interior. A further advantage possessed by cast-iron over stoneware drainage is the fact that the necessary bends, connections, and provision for inspection can be readily made to suit the special needs of any particular premises.

The advantages of iron drainage have been far more generally recognised in the United States of

America than in this country, and the work under review is doing a good service in advocating a wider adoption of the safer method.

The general principles of sanitary drainage construction are also discussed in a very sound and practical manner; and the directions given throughout the book leave nothing to be desired on the score of clearness.

Macmillan's Orographical Map of Europe. Designed by B. B. Dickinson and A. W. Andrews. Size, 62×51 inches. (London: Macmillan and Co., Ltd., 1908.) Cloth, mounted on rollers, price 15s.

Notes on the Orographical Map of Europe. By the same authors. Pp. 30. Limp cloth, price 1s.

IN this excellent wall map the distribution of lowlands and highlands is shown by six different colours representing land below sea level, and that between the contours 0–600 feet, 600–1500 feet, 1500–3000 feet, 3000–6000 feet, and above 6000 feet. Ocean depths in fathoms are indicated by white and four shades of blue. The only names on the maps are printed very small, and are intended for the use of the teacher exclusively. The position of important towns is indicated by dots. These expedients have made it possible to produce a remarkably clear map on which the physical features of essential importance can be seen easily from every part of a class-room. In these days, when all good geographical teaching is based upon the broad principles of physical geography, an orographical wall map is an absolutely necessary accompaniment to every lesson, and teachers will welcome such a map designed by two competent authorities and produced in the best modern style at a moderate price.

The explanatory handbook provides valuable guidance as to how the map may be used most instructively.

Familiar Swiss Flowers. By F. E. Hulme. Pp. viii+224. (London: Cassell and Co., Ltd., 1908.) Price 7s. 6d. net.

THE title of the book makes it evident that it contains a selection of species, and is written for the *dilettante*. As the illustrations are the guiding and principal feature, the former is a necessity, and as to the second observation it is recognised that professed botanists are few, while the number of those sufficiently interested in flowers to learn their names is large. It will also be noted that Mr. Hulme is not treating of Alpine flowers only, although a number of these are naturally included.

The author's talent for depicting flowers is well known from the floral studies reproduced in "Familiar Wild Flowers" and other publications. The plates in the volume under notice bear evidence of his appreciation of the characteristic appearance and identity of the various specimens; the illustrations of the anemones and the white flowers are especially charming. The author has somewhat unnecessarily mingled the figures of plants that bear no relationship to one another, and has taken up valuable space with a few flowers that are too well known to require illustration; but the selection is generally wise, and the inclusion of many lowland plants should meet with approval. Sufficient information is given in the text to determine many species allied to those chosen for illustration.

At the present time of year, when so many tourists are contemplating a holiday in Switzerland, they will assuredly add to their pleasure by taking with them the means of identifying the flowers that appear to have a greater brilliancy in that country owing to their profusion, and this book, prepared with such a purpose, can be safely recommended.